

## WHAT IS CLAIMED IS:

*Sub A*

1. A method for treating a silicon substrate, comprising:  
5 placing the silicon substrate into a sputtering equipment unit;  
10 performing a sputtering step to simultaneously dry clean and amorphize the  
silicon substrate surface by first using the sputtering equipment unit; and  
15 depositing a titanium film on the silicon substrate by second using the sputtering  
equipment unit.

*Sub B4*

2. The method of claim 1, wherein the titanium film is deposited at about 540°C.

3. The method of claim 1, wherein the sputtering equipment unit is an ionized  
10 metal plasma (IMP) equipment unit.

*Sub A6*

4. A method for treating a silicon substrate having a surface, comprising:  
15 providing a pre-processing chamber, wherein the pre-processing chamber has first  
and second power supplies for sputtering argon therein, wherein the first power supply  
can provide the argon with a first bias, and the second power supply can provide the  
silicon substrate with a second bias;

20 placing the silicon substrate into the pre-processing chamber;  
providing the first bias to the argon;  
providing the second bias to the silicon substrate; and  
modifying the first bias and the second bias to sputter the argon to simultaneously  
dry clean and amorphize the substrate surface.

25 5. The method of claim 4, wherein the first bias is about 250W to about 450W.  
6. The method of claim 4, wherein the second bias is about 150W to about 300W.  
30 7. The method of claim 4, wherein the pre-processing chamber is a chamber in an  
ionized metal plasma (IMP) equipment unit.

8. The method of claim 4, further comprising the step of depositing a metal film on the substrate after the substrate surface is amorphized.

9. The method of claim 8, wherein the metal film is deposited in the pre-processing chamber.

10. The method of claim 8, wherein the metal film is made of titanium (Ti).

11. The method of claim 8, wherein the metal film is made of cobalt (Co).

12. The method of claim 10, wherein the metal film is deposited by  $TiCl_4$ -based CVD.

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